

Title (en)
CONTROL FLOW GRAPH FLATTENING DEVICE AND METHOD

Title (de)
STEUERFLUSSDIAGRAMMGLÄTTUNGSVORRICHTUNG UND -VERFAHREN

Title (fr)
DISPOSITIF ET PROCÉDÉ D'APLATISSEMENT DE GRAPHE DE FLUX DE COMMANDE

Publication
EP 3012762 A1 20160427 (EN)

Application
EP 14306694 A 20141024

Priority
EP 14306694 A 20141024

Abstract (en)
Control Flow Graph flattening of a function comprising a plurality of basic blocks having an address and at least one instruction. A processor (710) creates (510) a jump table associating a label (X_i) of each basic block with its address, creates (512) a coefficient array comprising constant coefficients, creates (514) a dispatcher basic block comprising instructions to look up an address in the jump table and to jump to the address, replaces (516) a jump terminal instruction by a jump to the dispatcher basic block in each basic block, creates and inserts (520) at least one lookup function in each of the plurality of basic blocks, each lookup function returning a derived value based on a constant coefficient depending on at least an index (P_i) of the basic block; creates and inserts (522) a first branch function (B_i()) calculating the label (X_{i+1}) of a subsequent basic block based on at least the derived value, and a second branch function (B_{param i}()) calculating the index (P_{i+1}) of the subsequent basic block; and creates and inserts (524) into the dispatcher basic block a transition function (F()) obtaining the address in the jump table based on at least the label (X_{i+1}) of a subsequent basic block.

IPC 8 full level
G06F 21/12 (2013.01); **G06F 21/14** (2013.01)

CPC (source: EP US)
G06F 8/433 (2013.01 - US); **G06F 8/443** (2013.01 - US); **G06F 21/125** (2013.01 - EP US); **G06F 21/14** (2013.01 - EP US)

Citation (applicant)
• US 2013232323 A1 20130905 - LEROUGE JULIEN [US], et al
• "A Security Architecture for Survivable Systems", PHD THESIS
• C. WANG; J. DAVIDSON; J. HILL; J. KNIGHT: "Protection of software-based survivability mechanisms", DEPENDABLE SYSTEMS AND NETWORKS, 2001
• J. CAPPAERT: "Proceedings of the tenth annual ACM workshop on DRM", 2010, ACM, article "A General Model for Hiding Control Flow"
• JUNG GE; SOMA CHAUDHURI; AKHILESH TYAGI, CONTROL FLOW BASED OBFUSCATION. IN PROCEEDINGS OF DRM 05
• D. AUCSMITH: "Information Hiding", vol. 1174, article "Tamper Resistant Software: An Implementation"

Citation (search report)
[I] CHENXI WANG ET AL: "Software Tamper Resistance : Obstructing Static Analysis of Programs", INTERNET CITATION, 31 December 2000 (2000-12-31), XP002437560, Retrieved from the Internet <URL:http://citeseer.ist.psu.edu/wang00software.html> [retrieved on 20070612]

Cited by
EP3671497A1; CN113439271A; US11783013B2; WO2020126711A1

Designated contracting state (EPC)
AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR

Designated extension state (EPC)
BA ME

DOCDB simple family (publication)
EP 3012762 A1 20160427; EP 3012763 A1 20160427; US 2016117155 A1 20160428; US 9904526 B2 20180227

DOCDB simple family (application)
EP 14306694 A 20141024; EP 15190952 A 20151022; US 201514922151 A 20151024